



Dental X-rays while pregnant

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Abstract

Our current article deals with a very important issue related to the health of the fetuses while they are in their mothers' wombs during the detection of a specific problem that occurs in the teeth of the mothers and its review to the specialized dentist, and the case requires that the abnormality be detected through the use of X-rays. The possibility that the fetus in the mother's womb will be affected by X-rays is very small, or almost non-existent. X-rays help detect many different problems that may exist in the teeth. In general, the benefits that can be gained from the diagnostic information from the use of X-ray images outweigh the potential risk to the fetus. However, when a pregnant mother undergoes a large number of x-rays of the abdomen in a short period of time, she must confirm whether she is pregnant or not, because this may be harmful to the health of the mother and her fetus.

Keywords: dental X-Rays, potential risk, pregnant

Introduction

There are questions by many women, is dental x-rays safe for pregnant women? In fact, yes, the diagnosis can be made by means of X-rays for pregnant women safely, and the percentage of fetal exposure to certain harm as a result of the use of these rays is very low, especially when used for teeth. In general, the benefits of using X-rays in diagnosing any defect that occurs in the teeth are great and outweigh the risks, as they help in detecting various types of problems in the teeth. However, some precautions must be taken into account, such as wearing a protective shield made of lead in order to provide adequate protection from the radiation that results from exposure to X-rays. So, (the American Dental Association) and (the American Congress of Obstetricians and Gynecologists) have stipulated that a pregnant woman can take dental radiographs, at any stage of pregnancy, provided that there are necessary radiation protection measures to keep the dose as low as achievable for performance. desired purpose ^[1, 2]. Most of the tests that require imaging using x-rays, including the legs and head, as well as the teeth and chest, may not expose the genitals to x-rays directly, It is possible to wear something that provides special protection, provided that it is lined with lead material to protect against rays that scatter when used. An exception is made for procedures that require X-ray imaging of the abdomen, due to direct exposure of the abdomen and fetus to X-rays. The risk of harm to the fetus depends on the pregnancy period the fetus is going through, as well as the amount and period of exposure to X-rays. Exposure to a large dose of radiation in the first month of pregnancy (the first two weeks) may lead to spontaneous abortion of the fetus, so high doses should not be used in diagnostic radiography.

Increasing exposure to radiation in high doses in the period ranging from two to eight weeks of pregnancy increases the risk that it works to restrict the growth of the fetus or may lead to birth defects in any form. While exposure to X-rays during the period between weeks 8 and 16 increases the risk of developing intellectual disability, so there must be caution in this aspect, and note that the moderate dose of

diagnostic X-rays should be much less than the high doses that lead to complications occur. There are a number of studies stating that most dental students and some dentists do not have sufficient knowledge regarding the use of diagnostic imaging and maintaining safety from the effects of radiation ^[3, 4]. Physicians' views regarding the potential teratogenic effects or risks of imaging screening were investigated in different ways. Studies have also shown that there are misconceptions, which in and of themselves have a negative impact on patient care ^[5, 6]. Before proceeding with the X-ray, the woman should tell the doctor that she is pregnant or that she suspects that she is pregnant. Accordingly, it may be possible to postpone the X-ray examination or to modify or reduce the amount of radiation used during the diagnosis. In addition, the baby who will be X-rayed should not be held during the test if the woman is pregnant. If the X-ray examination was done before the woman knew she was pregnant, the primary health care provider should be consulted, to avoid any risk. An approximately tenfold reduction in radiation dose can be achieved using digital or film F-speed sensors in combination with rectangular bitewing collimation and a full mouth radiograph ^[7]. It is advised not to perform dental x-rays in the diagnosis of pregnant women, but in emergency cases that may affect the health of the mother, there is nothing wrong with that. It is also advised to postpone any condition requiring x-ray diagnosis until the time of delivery. Note that only the dentist is able to determine whether there are benefits from x-rays and beware of possible harm, and based on that, a decision is made regarding the possibility of using x-rays in diagnosis. The dentist's vision of the need to resort to the use of X-rays in the diagnosis is imperative for the mother to wear a protective shield, especially on the abdominal region, to protect the fetus.

Dental X-Ray

Dental x-ray defined as a realistic image that shows the anatomical parts and what is related to the teeth. It is used by the dentist in order to assess the pathological and health

condition of the mouth and teeth, as well as the gums. It is used in diagnosis mostly with a small percentage of radiation, so taking pictures from The inside of both teeth and gums. Thus, the dentist can identify the defect and know most of the problems that the teeth and gums suffer from, such as caries, tooth decay, and the effect of infections in the gums, although the application of dental x-rays is somewhat complicated, but its medical tools are actually very common and It is very important for the health and safety of the mouth and teeth, and it is no less important than brushing the teeth. There are a number of risks associated with the imaging procedure by means of dental rays, although the dose used in this imaging process that the patient is exposed to to detect defects in his teeth is the lowest possible, the surgeon and the doctor who prescribes the necessary medications for that must be aware their responsibilities when it comes to exposing the patient to ionizing radiation. At present, the UK has two sets of the most important rules relating to X-rays, these are the Ionizing Radiation Rules 2017 and the Medical Ionizing Radiation Rules (IRMER 2018). The rules of ionizing radiation 17 are mainly related to the protection of medical staff as well as workers, taking into account the standards of equipment. While the rules of ionizing radiation 18 are intended to protect patients. These regulations, mentioned above, replace previous versions that were used and followed for many years, such as (Ionizing Radiation Rules 99 and Medical Ionizing Radiation Rules 2000) [8]. All this change has come primarily as a result of the basic directives required in the 2013 Safety Standards, which known as (European Council Directives 2013 \59 Eurotam), which apply in all (E.U. countries), and were passed into national law in 2018. It should be known that the European Union and the United States of America are mainly subject to the (Eurotam directive 2013/59) [9], and follow all federal guidelines for radiation protection. The main objective of applying all these standards, and other standards to which other countries are subject, is to protect the patient and medical staff, as well as to ensure the safety of all used maintenance equipment and quality assurance as well. The Health and Safety Executive in the United Kingdom has also published a blog that includes the most important practices that must be adopted along with the associated guidelines, which provide practical advice on how to comply and be subject to the law [10]. Although following approved codes of practice is not mandatory, adherence to them can be extremely beneficial for people involved in the use of x-rays.

Medical conditions that require a dental x-ray for a pregnant woman

Dental x-rays are considered safe during pregnancy as long as radiation protection measures are in place [11]. There are some problems that happen to the teeth during pregnancy that require an X-ray of the pregnant woman's teeth, as it will help the doctor to diagnose the condition and put the best treatment plans suitable for the woman if she is pregnant. It should also be noted that if these problems are left undiagnosed or treated, they may lead to some complications and serious effects on the pregnant woman, and among the most important problems that may cause a defect in the teeth are:

Nerve pull

The use of X-rays has a role in detecting whether there is a spread of infection to the gums, the rest of the teeth, or the oral cavity as a whole, as shown in figure no. 1- (A, and B):

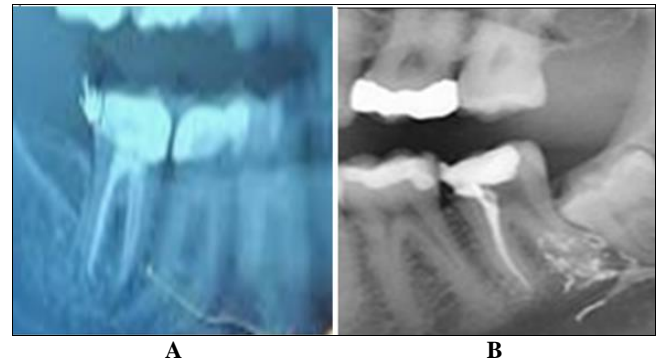


Fig 1: (A, and B)

Gingivitis

In order to reveal the cause that leads to inflammation and swelling of the gums, figure no. 2- (A, and B):

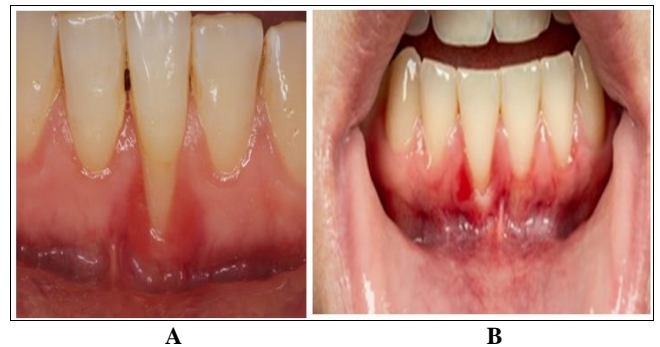


Fig 2: (A, and B)

Tooth extraction

especially when the tooth is infected with cavities and detecting whether there is a small cavity between the teeth or if there is a hidden cavity under the fillings, figure no. 3- (A):



Fig 3: (A)

Pyogenic tumor

It may lead to serious complications when left undiagnosed or treated, as shown in figure no.4:



Fig 4: (A)

There are a number of tips that must be followed when taking a dental X-ray for a pregnant woman during the diagnosis in the event of a dental defect, which are:

- The dentist must be informed by the woman that she is pregnant before taking an x-ray at the time of diagnosis, because the dentist may recommend, depending on the medical condition, to postpone the dental x-ray until after the completion of childbirth.
- It is advised during x-rays to diagnose the teeth of a pregnant woman, to put a shield and collar made of lead material in order to protect the patient's genitals from any harmful rays.
- It is better to keep a record of documenting the X-ray examinations that were performed earlier, as they are useful in providing important basic information, as it is not necessary to perform another test.
- One of the important things is to conduct routine examinations for women, because hormonal changes during pregnancy will inevitably lead to some dental problems, and this matter requires the use of dental x-rays for pregnant women.

Methods used to avoid dental rays for pregnant women

A large-scale review focused on the global issue of awareness of dental practitioners and users of X-ray imaging techniques in the diagnosis of disease in pregnant women is very important. A number of researchers, as well as their students and trainees, were substandard [12, 13], therefore There should always be courses for specialists in order to gain the necessary experience to deal with the radiography process in an accurate and precise manner. There are several procedures that a pregnant woman can follow in order to maintain oral and dental health, and help her avoid any problem by avoiding the use of dental x-rays, the most important of which are:

- Brush your teeth at least twice a day with a good quality toothpaste that contains enough fluoride.
- Using floss to clean the teeth from time to time.
- Stay away from some foods that mostly contain sugars and always drink water.
- Emphasis on always cleaning the mouth and teeth, especially after finishing meals.
- visit the dental clinic constantly in order to examine the mouth and teeth on a regular basis.

The effects caused by pregnancy on oral and dental health

There may be an effect of pregnancy on the health of the mouth and teeth, so regular examinations must be performed before and after pregnancy and the need to address any problems with oral and dental health and follow good habits to maintain the health of the mother and the child together, and Among the most important problems related to the mouth and teeth that a pregnant woman may suffer from are [14].

1- Gingivitis

The mouth of a pregnant woman is often affected by hormonal changes during pregnancy, and these changes lead to gingivitis for a pregnant woman, represented by swelling and swelling, as well as a little bleeding of the gums when brushing or flossing the teeth.

2- Tooth decay

Pregnant women are more exposed to tooth decay, for several reasons, including Excessive intake of carbohydrates. Morning sickness, as it leads to an increase in the percentage of acids that the mouth and teeth are exposed to. Neglecting to brush teeth for a long time during pregnancy for various reasons, including exhaustion.

3- Pregnancy swelling

This condition is represented by an increase in the growth of gum tissue, which often occurs during the second trimester of pregnancy. It should be noted that these tumors are not cancerous, and they usually disappear immediately after birth.

Dental treatment during pregnancy

It is possible to perform the necessary dental treatment at any time during pregnancy, however, the appropriate time to perform dental treatment during pregnancy is in the second trimester of the pregnancy period, i.e. in the fourteenth week up to the twentieth week. Because during this period, the fetus's organs grow fully during this period, in which the risk of side effects is less, as some research indicated that pregnant women who treat their teeth with temporary and permanent fillings, or undergo tooth extraction, or suffer from the occurrence of neuritis in the teeth During the second trimester of pregnancy [15]. Most of the emergency cases of severe pain and swelling in the mouth must be dealt with quickly, because the consequences of such cases is the inability to treat any infection during pregnancy. There are many possible risks of medications used by a pregnant woman in dental treatment, and it is always advised to consult a doctor when feeling concerns and questions about dental care during pregnancy. There are documents that included facts and rationale published by the Association of Physicists in Medicine calling for avoiding the use of shields for the fetus, and gonads because there is no evidence confirming the existence of danger in diagnostic imaging techniques using X-rays [16]. And with all that, although the use of lead to protect the sick is no longer necessary, it does provide the patient with reassurance and an assurance of safety [16, 17].

Oral and dental health care before pregnancy

It is not necessary to consider a dental examination as an isolated procedure to be performed during pregnancy. Before pregnancy, a special and regular dental care program should be established as a preventive measure. Establishing a program for regular periodic examinations of the teeth, including radiological examinations that are clinically indicated, is part of this program, and it must continue for a long period in order not to multiply the defect that may occur to the teeth during pregnancy.

Oral and dental health care during pregnancy:

There should be a continuation of preventive dental programs, as well as dental restoration and rehabilitation programs during pregnancy, as needed. Most dental treatments can be done safely during pregnancy. However, in the event that there is a reason for postponing treatment, such as elective procedures that require anesthesia, it should be postponed as much as possible until after childbirth, or if necessary until the patient's condition is confirmed and evaluated.

Recommendation

We would like to offer some tips for a pregnant woman in the event that she is exposed to a certain dental disease in which the diagnosis is required to be made by conducting a CT scan by x-ray, so she must always follow the instructions of the doctor and dentist and pay attention to any note related to the disease And inform the doctor about it and listen to all his instructions and what he recommends, in order to preserve the health of the mouth and teeth on the one hand, and to preserve the safety and health of the fetus and its safety as well.

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